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On the geographic range and distribution of the genus Trichopoda.

By C. H. T. TOWNSEND, Las Cruces, N. M.

The Tachinid genus *Trichopoda* is, so far as known, exclusively American. It is not necessarily tropical in distribution, though a considerable number of species have been reported from the tropical portions of South America. It is, however, peculiarly limited in range to certain topographical conditions, being found usually only at low elevations, down near the sea-level. It seems to attain its maximum development in the more southerly, but temperate latitudes of the United States, near the Atlantic seacoast. It is represented on the Pacific coast but by a single species, *T. pennipes* Fab., which is found from New England to the Argentine Republic, in favorable localities situated but little above sea-level. It is notable, also, that this species is the smallest one of the genus.

So far as my personal observation in collecting goes, I can give the following notes on the range of the genus: I have never found *Trichopoda* in other than one locality, the District of Columbia, on the Virginia side of the Potomac. There it is well represented in both number of species and individuals. I do not re-

member ever seeing it in Michigan, but Cook records *T. pennipes* there. I have never found a specimen of the genus in New Mexico or Arizona. During a two weeks' trip in Old Mexico I saw none, though I went out quite extensively in the country around Orizaba and Cordova in the month of August. These places are, however, from 2000 to 2500 feet above sea-level.

Other records show the distribution of the genus as follows: Along the Atlantic coast from Connecticut south, and especially in Virginia, the Carolinas, and Florida; also along the Gulf coast of the Southern States, and in Texas. The specimens from which most of the North American species were originally described by the early writers came from the Carolinas, and two species from Georgia. Other species were described from the region of the Amazon, eastern Brazil and Argentine Republic, Guiana, Venezuela and the West Indies. *T. arcuata*, a small species which seems to be distinct from *T. pennipes*, is described by Bigot from Chili, and probably represents the latter species in that region.

T. pennipes is known inland from Michigan, Indiana, Illinois, Iowa, and occurs in California, as well as in Old Mexico, Brazil and Argentine Republic, as stated above. I have also specimens from San Domingo and Jamaica.

The next species to *T. pennipes* in extent of range inland is *T. histrio* Wlk. (syn. *T. trifasciata* Lev.) It is recorded from Connecticut, Illinois and Kansas.

These two species are the only ones I know that are found any distance inland in the United States. They do not seem to be found, however, more than a few hundred feet above sea-level. Regarding the apparent scarcity of this genus in Mexico, which is mainly a high plateau region, it may be noted that the Biologia Centrali-Americana collections contain, as indicated in the "Biologia Diptera," vol. ii, but two specimens of *Trichopoda* from all the region of Central America and Mexico. These belong to two species: *T. pennipes*, a ♀ from Presidio, Mex. (less than a thousand feet elevation), and *T. pyrrhogaster*, a ♂ from San Geronimo, Guatemala (probably not over five hundred feet elevation). It is quite a significant fact that these were the only specimens obtained by the Biologia collectors in all that region.

As before stated, the only species, so far as I am aware, that has ever been found on the Pacific coast, or even on the Pacific

slope, being that region west of the Continental divide in both Americas, is. *T. pennipes;* or, in South America, what I have considered as its Chilian representative, *T. arcuata.* The genus, therefore, seems to attain its most perfect development on the Atlantic coast. It is notable, also, that it is a genus that is not represented in Europe, but is strictly American. It is quite possible that these facts have an important bearing on the subject of the phenomena of life on the Pacific coast, treated in such an interesting manner by Dr. S. H. Scudder in the "Overland Monthly" for April, 1892.* Dr. Scudder shows, in this article, that those butterflies and other insects, which are common to eastern and western America and Europe, have the greatest number of broods annually in the eastern United States, while in the same latitudes in Europe and on the Pacific coast they have a less number. In the same manner, genera common to those three regions exhibit a greater number of species on the Pacific slope and in Europe than in the eastern United States. *Trichopoda* does not tend to confirm this law, since it reaches its greatest development on the Atlantic coast, at least in number of species. Does the fact that the genus is peculiarly American have any bearing on this point? Does a genus that is peculiar to America naturally reach its highest development on the Atlantic coast? The study of the single species, *T. pennipes*, may give a different result.

Either the natural conditions prevailing west of the backbone of the continent, which restrain the tendency to the over expenditure of vital energy, have worked to the disadvantage of other species of the genus, which have not been able to adapt themselves thereto; or, what is somewhat more probable, these species originated in the eastern region and have never passed the barrier of altitude which lies between them and the Pacific coast.

It should be noted, also, in this connection, that the genus *Trichopoda* probably represents the most highly specialized type of insects.

LORD WALSINGHAM has accepted the vacant position on the editorial staff of "The Entomologist's Monthly Magazine," caused by the death of Mr. H. T. Stainton.

* The "Californian" of the future—"Overland Monthly," April, 1892, pp. 383-386.

NOTES ON THE ENTOMOLOGY OF COLORADO.—III.

By T. D. A. COCKERELL, Kingston, Jamaica.

GARFIELD, S.

The observations in this county date from September 9th to September 14th, and relate only to the extreme eastern portion, from the neighborhood of Cattle Creek to Glenwood Springs and Divide Creek. The country about Glenwood Springs is dry, hot, and dusty; or wet and very muddy, according to the weather. Near Cattle Creek, and also at Glenwood Springs, the Scrub Oak (*Quercus undulata*) and *Achillea millefolium* were observed; and *Malvastrum coccineum* at Glenwood Springs and Divide Creek. The snail, *Patula cooperi*, was several times noticed. *Helicopsyche* cases were found in Divide Creek; and sand from there yielded a trace of gold. Near Cattle Creek I took *Bradycellus cognatus* Gyll. and two wasps, *Vespa diabolica* Sauss. and *Polistes aurifer* Sauss. These latter illustrate that mingling of separate faunæ, which helps to make Colorado so rich in species. The *Vespa* is truly boreal, while the *Polistes* extends to California, no doubt (although actual records seem wanting) across Arizona and southward.

At Glenwood Springs *Lycæna exilis* Bdw. and *Agrotis* (*Feltia*) *venerabilis* Walk. were taken; and at Divide Creek *Agrotis* (*Carneades*) *ridingsiana* Grote, and *Prionony x thomæ* Fb. Here again we see two faunæ; the first mentioned, *Agrotis*, being boreal and eastern, while the other is southern and western, "Colorado, Arizona, New Mexico" being its range according to Prof. J. B. Smith. Near the head of North Mam Creek, on September 14th, *Vanessa antiopa* was seen; and *Dryops striatus* Lec. was taken, the exact locality now uncertain.

EAGLE, S.

We traveled south of the Eagle R., along the road from Red Cliff to Glenwood Springs. The Eagle is a pretty river, clear and shallow, but the country, especially about Gypsum, is dry, with little else than sage-brush. Red sandstone hills, scattered with conifers, rise on either side of the plain in which the river flows. By Squaw Creek I took *Platynus jejunus* Lec., and it is a curious coincidence that the only other time I ever met with

this uncommon and singular species was by Squaw Creek, in Chaffee County. *Pœdisca ridingsiana* Rob. was found near Gypsum on September 8th.

Crossing over Cottonwood Pass, on September 9th, the features of the country were entirely changed. The sky cloudless blue, and rising against it gray rocks covered with lichens; and hillsides, all Oak Scrubs Quaking Asps, Wild Cherry and Dwarf Birch. The Oak, some of the brightest green, some vivid red; the Aspens yellow, Wild Cherry red, and Birch yellow; all intermixed and giving the landscape far more color than flowers could do.

CAPTURING CATOCALÆ.

By A. J. SNYDER, North Evanston, Ill.

Early in the morning on August 3d, my wife and I left Farnia, Ill., for a fourteen-mile drive into a wild part of Clay County. We wished to visit a place called "Rattle Snake Den," a section which I visited several years previous with some friends who were interested in geology, and where we found some valuable fossils. It occurred to me that this same locality might prove, as it was covered with a good growth of oak and hickory trees, a good hunting ground for Catocalæ.

About two miles southwest of Iola, a small country post-office, we entered the woods, and finding the country much changed since my previous visit we drove but a short distance when I alighted and began my search for the creek bed which we had explored before. Whip in hand, brushing the trees as I passed, almost immediately I started a fine specimen, probably an *obscura*, and in my haste to capture it became excited and lost it. Soon, however, I had better success, and took a fine specimen on an oak, and almost at once another from a scalebark hickory near the first. Failing to find the place of which I was in search, I turned in another direction, and crossing a swampy piece of land, then dry, I started a fine *cara*, and an exciting chase began. The insect was so large that several times in attempting to take it with the bottle I touched its wings and it escaped. I soon captured a very fine specimen, however, of the same species.

My next capture was a fine *grynea*. After some time we found the desired locality, and, hitching the horse, we began the hunt

in earnest. To use a common expression—"The woods were full of them," but they were rather wild. Occasionally one would light high and necessitate taking it with the net. I found such specimens were seldom perfect though I used great care and speed in killing and removing. Later in the season I tried chloroforming such specimens and rather liked the plan, as in this manner I secured some good specimens which would otherwise either have been ruined or else have escaped. We searched one side of the stream only and probably a strip four rods in width and two hundred yards in length, but by noon had taken seventeen fine Catocalæ, several Geometrids and a few *Neonympha eurytris*.

Eating dinner as quickly as we could, conveniently, we began the chase again, going over the same ground and then returning on the opposite side of the creek. We found the *game* (no other word seems appropriate to me) even more plentiful than in the morning. On one hickory tree I found six specimens and at least three species. Sometimes we could see them without scaring them up, but so closely do the closed wings of these beauties resemble the bark that it required great skill and generally we found them by "whipping" the trees. We were compelled to leave the field early to reach home, and it was with much regret that we finally relinquished the chase after having taken forty fine Catocalæ.

To me it was one of the most exciting and enjoyable days I ever spent after insects, and I was proud of our catch. We hoped to revisit this locality before the season was over, but found it impossible. On the 16th of August I took about twenty more specimens of Catocalæ near Central City, Ill., and at different times during the season took a few at sugar. I have now in my collection the following species (twenty-three in all) which I have taken in Clay and Jackson Counties, and which represent one day's collecting and several odd hours that I could spend in the woods: *viduata*, *desperata*, *flebilis*, *robinsonii*, *obscura*, var. *simulatilis*, *residua*, *amatrix*, *cara*, *ilia*, *neogama*, *piatrix*, *habilis*, *grynea*, *innubens* var. *scintillans*, *angusi* var. *lucilla*, *insolabilis*, *palæogama*, *amica* and var. *nerissa*.

I can report very successful collecting in Fayette County during the months of July and August, also some fine captures during September in Cook County. I also succeeded in raising several broods of larvæ, the most interesting of which was a small brood

of *Paphia troglodyta*, though I almost failed in this because of absence of the food-plant here. To me the Catocalæ are especially interesting, because so little is known of them. A certain wind brings them and then they are gone, no one knows where. I hope to hear more through the ENTOMOLOGICAL NEWS concerning this interesting group.

———o———

Some old Forms of our Common Diurnals, with a few Remarks.

By GEORGE A. EHRMAN, Pittsburgh, Pa.

The strange variations which occur among our common insects are looked after by the specialist with equally as much interest as new or undescribed species, as mother nature is not constant in creating her offspring alike. I had the good fortune to capture a few exceedingly odd forms of our commoner species of diurnals in my locality during the past few seasons, and I wish to place them on record.

Papilio turnus Linn.—A male has the color of the right primary replaced by pale buff almost white instead of the usual yellow; it extends from the base to the black marginal band on the outer edge, taking up that space from the inner margin to the discal cell and extending upwards to the subcostal nervure; the black on the outer marginal band in this space is paler, otherwise the specimen is normal in structure and coloration.

Papilio turnus dimorphic ♀ *Glaucus* Linn.—Two examples that agree with the intermediate forms figured in Edw. Butt. N. A. 2, pl. 5, and a third example that is the same as the general run of *Glaucus*, but has a yellow body.

Papilio asterias Fabr.—A male of the usual form, but smaller in size, and the ocellus is without the pupil spot, hence it is blind-eyed like *Papilio machaon* Linn. of Europe.

Colias philodice Godt.—One male, normal on the upperside excepting the secondaries, on which the upper discal nervure and subcostal nervures are black; on underside of primaries there is a dark smoky arch extending from the inner angle to the discal cell.

Argynnis bellona Fab.—One female which has the right hand hindwing pale fulvous from discal cell to the outer edge of wing on the upperside, and the black spots are very faint; the same

wing on the underside is very pale and void of all markings, otherwise the insect is normal.

Grapta interrogationis Fab.; dimorphic form *fabricii* Edw.—Normal in form and coloration, but has an odd-shaped hole in the subapical space of the right primary, and in the secondary on the same side has a large egg-shaped hole near the outer margin, just above the tail. No doubt this specimen, which is a male, was injured in the chrysalid state.

Limenitis disippus Godt.—One female of the usual form and size, but with a large white blotch on the anal margin on the upperside of secondaries extending from the discal cell to the edge of the anal margin; the underside of the primaries normal, but the same side of secondaries is suffused with much white.

During the Summer of 1892 I took the following species that I never met in my locality before: *Terias nicippe* 1 ♂ and 1 ♀, *Vanessa milberti* 1 ♂ and *Thecla strigosa* 1 ♂, while *Euptoieta claudia* was very common. These are not rare insects by any means, but they seem rare around Pittsburgh.

———o———

DONACIA.

By Gus Chagnon, Montreal.

The neighborhood of Montreal, Canada, is undoubtedly the locality where, I think, the genus *Donacia* is the most largely represented. Thirteen of the (twenty) species described in Mr. C. W. Leng's valuable paper, "Synopsis of Donacia of Boreal America" can be found here.

Last July I visited a small pond a few miles from this city, and on the large leaves of *Nymphæa* and other plants growing on its shore, I captured *Donacia emarginata*, *D. subtilis*, *D. flavipes*, *D. palmata*, *D. piscatrix*, *D. distincta*, *D. pubescens*, *D. pusilla*, and two varieties of *D. cincticornis*.

Provancher, in his "Coleopteres de la prov. de Quebec" records four other species, viz., *D. harrisii*, *D. hirticollis*, *D. æqualis*, *D. rufa*, and says that they are to be found between here and Quebec. This total of thirteen species for Montreal must be extraordinary when they are only twenty in all—Boreal America.

Sphæridium scarabæoides, which has been introduced from Europe, is now very common here. I had the pleasure to send several specimens of it to Dr. Geo. H. Horn.

NOTES ON THE NOTODONTIAN GENUS ICHTHYURA.

By A. S. PACKARD, Providence, R. I.

From an examination of the collection of the late Henry Edwards, in the Museum of American Natural History of New York, and my own collection, I believe that the number of species of this genus will have to be considerably reduced. I have arrived at the following results, subject to future correction, when our collections of the moths themselves shall be more complete, both in bred series and in specimens from widely scattered localities, differing in meterological features, and when our knowledge of the larval histories will be far more extensive than at present. It is a pity that entomologists feel called upon to describe supposed new species, when, as is often the case, they are merely local or climatic varieties. A number of species of North American Bombyces range from the Atlantic to the Pacific coast. In the damp eastern and northern States they tend to melanism; in the dry, hot region of Utah, Arizona, and other portions of the Great Basin, they tend to become pale or whitish gray, having a faded appearance, while in California with its great range of climate, from the wet and cool mountain regions of the Sierra Nevada to the dry parched desert tracts of Southern California, the conditions are favorable for the production of remarkable variations. I am indebted to the kindness of Mr. Beutenmüller, the Curator of insects at the American Museum of Natural History, for giving me access to Mr. Edwards' collection.

The more typical American species is *I. inclusa* Hüb., of which *I. palla* French is a pale form. I owe to the kindness of Prof. French two type specimens; one of them is exactly like a pale normal *inclusa*, the costal silvery line being nearly straight, as in *inclusa*, and thus readily separable from var. *ornata*, the pale form of *I. vau* Fitch.

Ichthyura vau Fitch, (*Clostera incarcerata* Boisduval, 1869). After examination of my type of *I. indentata* in the Harris collection I find it agrees with Fitch's description. I regard *I. ornata* G. & R. as only a climatic variety of Fitch's *vau*, and a specimen of *I. ornata* G. & R., so labeled by Mr. Edwards, is also labeled "*incarcerata* Boisd.;" and on comparing Boisduval's description of *incarcerata* with specimens of *ornata* from California, Truckee Valley, Reno, Nevada, and Colorado, I do not see any specific differences.

I. incarcerata (*I. ornata*) is a larger and generally paler form than *I. vau* of the eastern States, and I think it is simply a climatic variety of the eastern form. One ♂ and a ♀ in the Edwards collection are as dark as the typical eastern *vau*, and the pale form may be a seasonal variety. Indeed, Mr. Beutenmüller informs me that in *I. vau*, which he has reared, the pale form is the Summer brood, the dark individuals belonging to the Winter brood.

One ♀ from Truckee, and a small ♂ from the Sierra Nevada, Cal., are very pale.

Ichthyura inornata Neum., Papilio ii, Oct. 7, 1882. I am strongly inclined to regard this form as a climatic variety of *I. vau*, var. *ornata*. One median-sized ♀ *ornata* from Southern California intergrades with *I. inornata*, though it is much smaller. It has the large, diffuse discal spot, and pale leaden intervenular patches of *inornata*.

Of *I. inornata* Neum., a male and female from Arizona are in the Edwards collection. It is the largest and palest of all our forms. It scarcely differs from *I. ornata* in the situation of the lines and their relative distribution; the oblique costal white line and its continuation across the wing are the same, and the obtuse, almost rounded apex of the V, does not quite reach the hind edge, just as it does not in *ornata*, but the loop made by the obtuse apex is more marked in *inornata*. The short middle line, ending on the hind edge of the wing and the dislocated basal line are exactly as in *ornata*.

I. inornata, then, appears to be only a very large and unusually pale subochreous form of *vau*, following the same law of climatic variation, *i.e.*, increase in size, and a pale, faded appearance in Pacific coast examples (south of Oregon), due probably to a hot, dry, desert region, with a light surface soil. By adaptation to these conditions the moths are better protected from observation, and thus the life of the species is assured.

I. luculenta Edw., Ent. Americana ii, 10, April, 1886. One ♂, type; north Indiana. This appears to be only a variety of *I. strigosa*. It differs from typical *strigosa* as follows: the oblique whitish line forming the inner arm of the V is a little more oblique and distinct than in the normal *strigosa*. The outer arm of the V, and the silvery white costal mark is exactly as in *strigosa*.

Ichthyura jocosa H. Edw., Ent. Americana ii, 10, April, 1886. One ♀, type; Indian River, Fla. This is only a small *inclusa*, differing from the normal form of the species in the inner arm of the V being firmer and less sinuous, being interrupted at the union with it of the short middle line which ends on the hind edge of the wing, while in *inclusa* the line is not usually interrupted, although two of the *inclusa* in Mr. Edwards' collection do have the line interrupted as in his type of *I. jocosa*. The latter is also more generally subochreous than usual, and without a line on the hind wing.

Ichthyuria bifiria H. Edwards, Ent. Americana ii, 167, December, 1886. This is very near *I. brucei*, the wings being of the same shape, and the moth of the same size, with the same beautiful lilac shades on the fore wings, thus differing from any other species, though it may yet be found to intergrade with *brucei*. The single type differs from Mr. Edwards' type of *brucei*, in the *oblique silver-white costal streak being more sinuous*, as is also the line across the wing which forms the continuation of the streak. On the other hand the other (inner) arm of the V is straight, not sinuous, the inner two lines are about the same. The submarginal spots and streaks are the same in both species.

The most important synonymy of the North American species of *Ichthyura* may provisionally, at least, be as follows:

1. *Ichthyura inclusa* Hüb.
   palla French.
   jocosa Edw.
2. *Ichthyura vau* Fitch.
   indentata Pack.
   incarcerata Bdv.
   ornata G. & R.
3. *Ichthyura astoriæ* H. Edw.
   (perhaps a var. of *vau*)
4. *Ichthyura inversa* Pack.
5. *Ichthyura strigosa* Gr.
   luculenta H. Edw.
6. *Ichthyura brucei* H. Edw.
7. *Ichthyura bifiria* H. Edw.
8. *Ichthyura albosigma* Fitch.

Walker's *Ichthyura apicalis* is possibly *I. vau*, but it is impossible to determine from his brief description, as he does not say whether the *albida maculaque costali* is oblique or not. In Barnston's MS. description quoted by Walker, the larva is described as "brown, thick, with sixteen feet, and with a band on part of the back;" "feeds on the Poplar leaf." This description will apply better to *vau* than to any other species known to me, as I have reared *vau* from the Poplar, and the larva is brown, short, though not with "a band on part of the back."

Two weeks' collecting in N. Carolina by Henry Skinner, M.D., and description of a new moth by Prof. John B. Smith.

The two weeks began July 7th, extending to July 21st. The time was mostly spent at Cranberry, Mitchell County. Cranberry is situated at an elevation of 3250 feet, and is a mining village, the terminus of the East Tennessee and Western North Carolina Railroad. I was accompanied by my friend, Mr. Philip Laurent, who gave an account of the Coleoptera taken on the trip in the January NEWS. The hotel at Cranberry is a model of comfort, and the table all that can be desired, and any entomological friends who wish to enjoy a stay in the mountains will be well treated at that place. We started out with great expectations, hoping to find new or modified Southern species, but were greatly disappointed, as the elevation of the region makes the fauna Canadian in character, as pointed out by Mr. Theodore L. Mead in an interesting article entitled, "Butterflies of Grandfather Mountain, North Carolina (Can. Ent. xxiv, 313)." Mr. Mead's experience was nearly the same as our own, but it is interesting to compare notes, even by collectors in practically the same field, and at nearly the same time of year. His stay was from July to September, and Grandfather Mountain is only a little over eleven miles from Cranberry. A part of Mr. Mead's description is as follows: "Grandfather Mountain is one of a group of mountains rising to a height of over 6000 feet in western North Carolina and eastern Tennessee, and forming the topmost crest of the Alleghanies." It is said that there are more than twenty-five peaks in this region higher than Mt. Washington, N. H. "The whole region one would suppose to be a paradise for mountain butterflies, and especially Satyridæ, which are well represented in the foothills and lower valleys of the Alleghanies. To my surprise I did not see a single Satyrid of any species during my stay, either at Linville (3800 feet), or at any higher point." (Mead)

Our experience with the Satyrids was not quite as meagre, as we saw *Neonympha canthus* quite common on the wagon-road between Cranberry and Linville. *Argynnis diana* we did not see at all. Mr. Mead says: "A single *A. diana* was the only suggestion of the rich butterfly fauna of West Virginia to the North of us." Dr. Rex, a Philadelphia naturalist, says he saw *diana* in great abundance on iron weed (*Vernonia*) on the low lands

along the Linville River. He may have seen *Limenitis ursula*, and, not being a lepidopterist, could not distinguish between the two species; however, I know *diana* is locally common in the region, and how local butterflies can be, is shown by the following: Mr. Mead says "*Argynnis cybele* is rare, and I saw only a single specimen, which was smaller than the associated *aphrodites*, although *cybele* is represented by really huge examples in the warmer valleys of Virginia." We found both *cybele* and *aphrodite*, both sexes, in great abundance at Cranberry, and in many variations as to color, size and markings, some of them the huge examples spoken of by Mr. Mead as being found in Virginia. These two species were the commonest butterflies at Cranberry. We did not find a single species of butterfly not found around Philadelphia, unless we except *Pamphila otho*, but we even have this in its Northern dress, *egeremet*. Mr. Mead, in speaking of his list which is practically the same as ours, says: "The list is noteworthy, chiefly for the absence of nearly all the butterflies characteristic of the latitude, and of many others one would expect to meet in so favorable a mountain region. It is possible that some of these missing species may be found in the early Spring when the mountains are said to be one blaze of color with Azaleas and Rhododendrons and all manner of vernal blossoms. These butterflies may lay their eggs early, so that the larvæ may have the whole season to grow, and then disappear; but this is mere conjecture, based on the well attested abundance of early flowers, of gay colors well suited for butterfly fertilization." I have quoted Mr. Mead's remarks in way of explanation of the scarcity of Southern Summer butterflies, as it is very interesting and may be true, as the low temperature in the mountains may be the cause of the retardation of the growth of the caterpillars which he mentions, "so that the larvæ may have the whole season to grow." We wore overcoats almost every night and had log fires in the office and parlor of the hotel. The average weekly temperature for July, at Cranberry, ranges from 62 to 66 degrees, and last July the highest point reached by the mercury was July 3d, 84 degrees, with the lowest point during the week being 49 degrees. At night, during July, the highest point reached was 60 degrees, and the lowest 47, so that it is quite cool during the day and cold at night.

There must be something to account for the scarcity of insects

and comparatively small number of species, both of Lepidoptera and Coleoptera, as vegetable life of all kinds is here in great profusion. On the slopes of the high mountains of Carolina and Tennessee the principal trees of Appalachian forests attain their greatest size and perfection, and in a ride of a few hours, covering a rise in elevation of 4000 or 5000 feet, one may see growing in their supreme perfection the trees of the South, like the magnolias; the trees of the Middle States, like the ashes, the oaks, the maples, and the lindens; then the birches, the pines, the mountain ashes, and the spruces of the extreme North. We ascended Grandfather Mountain and then went as far as Blowing Rock, which is thirty-two miles from Cranberry. We did not fare as well as we expected entomologically, but had a very pleasant time in every other respect. The absence of Hesperidæ, with the exceptions mentioned, seems remarkable.

SPECIES OF LEPIDOPTERA TAKEN.

BUTTERFLIES.

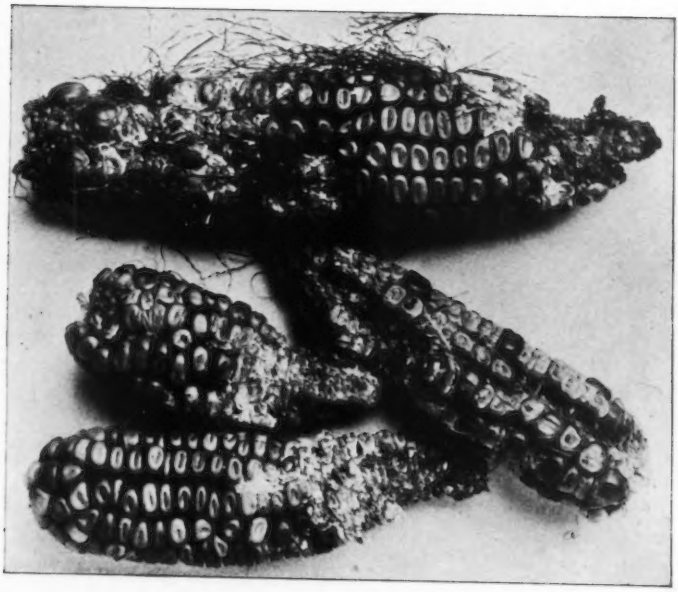
Danais archippus,
Euptoieta claudia (Mead),
Argynnis diana (Mead),
" *cybele*,
" *aphrodite*,
Phyciodes tharos,
Grapta faunus,
Pyrameis atalanta,
" *huntera*,
Limenitis ursula,
" *disippus*,
Neonympha canthus,
Thecla humuli,
Chrysophanus hypophlæas,
Lycæna pseudargiolus,
" *comyntas*,
Pieris rapæ (rare),
Colias philodice (large & beautiful),
" *keewaydin* (Mead),
" *eurytheme* (Mead),
Terias nicippe (seen at Blowing R.),
" *lisa* (Mead),
Papilio turuus,
" " *glaucus*,
" *troilus*,
" *asterias*,
Papilio philenor (Mead),
Ancyloxypha numitor,
Pamphila otho,
" *manataaqua*,
Eudamus tityrus.

MOTHS.

Sphinx eremitus,
Thyris maculata,
Euphanessa mendica,
Crocota sp.
Callimorpha lecontei,
Phyrrharctia isabella,
Spilosoma virginica,
Adoneta spinuloides,
Heterocampa trouvelotii,
" *manteo*,
Anisota stigma,
Clisiocampa americana.

NOCTUINA.

Pseudothyatira cymatophoroides,
" var. *expultrix*,
Acronycta hamamelis,
Eueretagrotis perattenta,
Carneades tessellata,
Mamestra renigera,
" *olivacea*,



INJURY DONE BY THE CORN-WORM (HELIOTHIS ARMIGER).

Hadena arctica,
" *lignicolor*.
" *modica*,
Tricholita signata,
Hydræcia nictitans,
" *velata*,
Leucania unipuncta,
Scolecocampa liburna,
Nolophana malana.
Cucullia convexipennis,
Plusia simplex,
" *precationis*,
Alaria florida,
Erastria muscosula,
" *carneola*,
Homoptera calycanthata,
Homopyralis tactus,
Pangrapta decoralis,
Pseudaglossa lubricalis,
Megachyta lituralis,
Zanclognatha sp.
Renia brevirostralis,
Bomolocha bijugalis,
" *scabra*,
Epizeuxis laurentii.

Epizeuxis laurentii n. sp.—Ground color very dark smoky-brown, almost blackish, vestiture dulled, not glossy or shining. Head and thorax immaculate, abdomen slightly paler, the segments narrowly edged with very pale luteous. Primaries with the blackish ground intermixed with luteous scales, which color also emphasizes the maculation; basal half line narrow, even, luteous; t. a. line geminate, upright, irregularly angulated and dentate; outline broad, distinct, blackish, inner line narrow and scarcely defined; included space pale luteous, prominent; t. p. line geminate, strongly and irregularly dentate, almost upright, only slightly outcurved; the inner defining line is broad, distinct, blackish, outer line narrow and scarcely marked, included space distinct, pale luteous; s. t. line pale luteous, prominent, irregularly angulated and dentate; a black terminal line, interrupted on the veins. Fringes concolorous, cut with narrow, pale luteous streaks beyond the veins, each streak starting from a larger dot at the base of the fringes; a broad, somewhat diffuse, upright, blackish median shade; orbicular small, punctiform, pale luteous; reniform narrow, upright, or kidney-shaped, pale luteous, centred with ground color; secondaries paler than the primaries, the ground apparently very pale luteous, dusted with blackish scales; three pale lines cross the wing, the first is within the middle and is broad, diffuse and little marked; the second is better defined, narrow, and dentate; the third is near the outer margin, is very distinct, and is strongly dentate; a black terminal line, interrupted on the veins. Fringes of the pale ground of the secondaries. Beneath, the maculation is almost a reversal of the markings of the upperside, but altogether more pale and less contrasting; a distinct black lunule on secondaries. Expands 24—25.5 mm.; .96—1.02 inches.

Habitat.—Mitchell County, North Carolina, in July.

One male and one female from Dr. Skinner, who has other specimens from the same locality. The new species is allied to *æmula* rather than *americalis*, the maculation being much the same, but the almost black ground of the new species is unlike even the darkest shadings of the gray in *æmula*, and differences

in the course of the lines emphasize the contrast in the ground color. The specific name is suggested by Dr. Skinner, but it gives me pleasure in adopting the suggestion to testify my appreciation of Mr. Laurent as a good collector and as a good fellow.

GEOMETRINA.

Caberodes confusaria,
Endropia serrata,
Calocalpe undulata,
Rheumaptera hastata,
Epirrita cambricaria,
Pterophora atricolorata.

PYRALIDINA.

Diathrausta pisusalis,
Pantographa limata,
Pyralis farinalis,
Argyria nivalis,
Crambus girardellus,
" *elegans,*
" *agitatellus.*

TORTRICINA.

Oenectra irrorea,
Dichelia sulfureana.

TINEINA.

Anaphora sp.

The moths are also Northern in character. Nearly all were taken at light at Cranberry. A few small Geometers and Micros are not included for want of names.

———o———

ELEMENTARY ENTOMOLOGY.

LEPIDOPTERA–HETEROCERA (Moths).

By Prof. JOHN B. SMITH, New Brunswick, N. J.

We may follow the series treated in the last number by the true Bombycidæ, using *Bombyx mori*, the well-known silk worm moth, as the type of the family, as it is the only species in our fauna referable to it. Strictly speaking, indeed, the silk worm is not a member of our fauna at all, but it has been domesticated, as we have domesticated so many animals for the benefit of man.

In this species we find a small, but distinct frenulum, best developed in the male, but evident also in the female. Vein 5 of both wings arises from the cross-vein almost midway between 4 and 6; the costal vein of the secondaries is connected with the subcostal by a cross-vein very near the base; the veins are nowhere crowded, and the cell is not as short as it is in some of the other forms that follow. The wings are quite large, the primaries distinctly falcate, the secondaries proportionate. The head is small, retracted, the antennæ pectinated in both sexes, the tongue obsolete, and the body in the female very stout and heavy. It is

in the larva state that this insect is useful to man, and then only when it is full grown and prepares for pupation, spinning a very dense and thick silken cocoon which has the advantage over all others that it is spun continuously, and allows itself to be unwound very readily. The silk is secreted by the caterpillar in two long glands, one situated on each side of the body, close to the digestive tract. These glands, taken from the full-grown caterpillar before it has begun to spin its cocoon, make the silk "gut," so well known to fishermen.

Following next in the series we have the Clisocampidæ. These include the genera *Clisiocampa*, *Artace* and *Tolype*. We have here a very decided shortening of the median cell, and a tendency to a crowding of the veins of the fore wings toward the costa. The secondaries have no frenulum, and this character may perhaps be made of more use systematically than has been the case heretofore. Prof. Comstock, if I mistake not, proposes the term "frenatæ" for one series of families, though I do not remember exactly what limitation was to be given the term. In both wings in this family vein 5 belongs to the median series; that is, it arises with or near 4, and not with or near 6. The head, as is usual in this series of families, is small, sunken, the mouth parts are obsolete, and the antennæ are pectinated in both sexes, much more evidently in the male. The wings are moderate in size, rounded, not angulate at any point, and proportionately somewhat larger in the male than in the female. The larvæ make a silken cocoon in which they pupate, but the silk is small in quantity and cannot be reeled. The genera referred to this family differ quite considerably in appearance, and to some extent also in habit; our common Eastern species of *Clisiocampa* is the *C. americana* of Harris, the larva of which is well known as the "tent caterpillar." The eggs of this species are laid in belts on the small twigs of the food-plant.

The remainder of the Bombyces of my list, so far as they are known to me, may be referred to the Lasiocampidæ. In this family we find the shortening of the cell carried to the extreme, while the veins are, as a consequence, unusually long. There is, further, a crowding of the veins to the costal region on the one hand, and a tendency to a branching of the veins of the costal series on the other. In the secondaries the costal is connected with the subcostal, and usually there is quite a large cell formed

at this point. There is no frenulum, but there are a small number of short veins from the costal vein near the extreme base, and these are supposed to be the origin of the structure. Vein 5 belongs to the median series in all the species examined by me. The head structure does not appear to differ very markedly from that of the preceding family, but the antennal pectinations are perhaps not quite as prominent. The wing form varies somewhat in the genera, but there is quite a distinct tendency to a dentate outer margin, to a tooth on the inner margin, or to an enlargement of the costal margin of the secondaries.

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PHILADELPHIA, PA., MARCH, 1893.

IT will soon be time to get your net out of camphor and dust off your cyanide bottle and take a look for Spring insects. There is much good work to be done, especially by the field naturalist, in studying seasonal variation, and we would urge the necessity of carefully labeling every specimen with date of capture. In the diurnal lepidoptera most of our species have probably been named, and perhaps some are named which should not have been. There are two general laws which have to some extent been overlooked, they are those of seasonal variation and geographical variation. These facts are well recognized in regard to some few species, as for instance in *Papilio ajax* and its variations and in *Lycæna pseudargiolus*. Why does it not apply to all? It is well known that the Canada examples of *Papilio turnus* are quite different in appearance from the Florida ones, yet in this instance no one calls the latter *floridensis*. If we were to erect names for every variation in a species we would in some cases have an *ensis* for nearly every State in the Union. When our butterflies are studied in series in relation to their geographical distribution, and the different seasonal broods are mapped out, we think

quite a number of names will fall into the second line. It has not been the general custom to put date of capture on the pins of individual specimens and on the papers of specimens in envelopes, but it should be done in all cases, as it may help solve one of the problems in relation to allied species and varieties.

In our June issue of last year we had occasion to acknowledge from a kind friend and patron of science, the receipt of a very generous contribution in aid of the publication of Entomological News. It was owing to this help that we were enabled to make such a gratifying improvement in the journal for 1892. And now, since our last issue, we are in receipt of another liberal gift from the same gentleman, for the same purpose. It is just such timely acts of generosity as these, that not only make us feel in a great measure compensated for the time and labor gratuitously given, but they encourage us to work the harder to make this the best and most popular entomological journal in the world.

Pictures for the Album of the American Entomological Society have been received from Dr. Geo. H. Horn (who also presented a fine picture of Dr. J. L. LeConte), Prof. F. L. Harvey, W. H. Danby, D. W. Coquillett, John D. Evans, Wm. Kayser, Lee B. Walton, W. Knaus, Nathan Banks, William J. Fox, Dr. Otto Staudinger and A. Bangs Haas (Blasewitz, Dresden, Germany), H. F. Wickham, and pictures of F. Schafhirt, W. F. Wenzel and Henry Feldman, presented by Mr. H. W. Wenzel. It should be understood that we want the pictures of *all persons interested in entomology*.

Hydrœcia medialis.—Mr. Tutt's note in the February number of the News illustrates how difficult it is, even by a picture, to give an adequate representation of an insect. I do not much wonder at the opinion that we had to do with a specimen or form of the European *H. micaceæ*, for there is a certain amount of superficial resemblance, which is misleading. But I assure Mr. Tutt that we have a really very different species, as I hope to prove when the full description is published. I have seen a considerable number of the European species, and some years ago made a rather careful comparison with our *H. obliqua* Harv., which is very much nearer to *micaceæ* than the species which I have just described; indeed, I am not at all sure that it will not prove the same in the event, but this needs further study and more material than I have at my command at present. I am by no means as ready as I once was, to admit that there are any great number of species common to Europe and to N. America.

John B. Smith.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

The World's Columbian Exposition.—One of the features of the exhibit to be made by the office of experiment stations at Chicago, will be a Biological Laboratory in operation. It is intended that certain simple and easily understood experiments will be constantly carried on, not to get results of course, but rather to give the public an idea of how results are obtained. As a part of this Laboratory, there will be a corner devoted to the entomologist and his contraptions, and at the request of the Director of the Office of Experiment Stations, I have agreed to take charge of this Laboratory, or rather the Entomological part thereof. It is the intention to have, primarily, a well-equipped Laboratory, or, perhaps better, the material for such an equipment, for one of the most important features of a good Laboratory—an abundance of room—will be wanting. This will show the public at large the tools of the trade, and will embrace breeding cages, setting boards, nets, cyanide and other bottles, and indeed everything that is necessary for everyday work. To make the thing look more natural, one table will be devoted to breeding some of the well-known and easily obtained pests, and perhaps some others will be mounted or otherwise prepared for examination and study. There will be a dissecting microscope in actual use at times, and a compound microscope to enable the stranger to appreciate the vastness of the subject under investigation. If we find the Chicago water suitable for the purpose, the kerosene emulsion will be made occasionally, and, when the neighboring chemical Laboratory gets too unbearable, a fish-oil soap will be made as an antidote. It is my desire, however, to make this feature of the exhibit something more than a mere show for the "gaping multitude," and if possible to obtain for the Laboratory a series of little contrivances in use by entomologists, which will be of interest and use to the collector and student, more than to the casual visitor. Almost every collector has some little contrivance of his own, either to collect, mount, inflate, or otherwise prepare his insects; or some little dodge in rearing or keeping specimens. A series of such little notions I am anxious to secure, and would be very much obliged if any of the readers of the NEWS who may have anything of the kind would communicate with me.

The Strawberry Weevil.—In "Insect Life," vol. iv, No. 3, Mr. F. H. Chittenden has an article that treats of this pest. The study made is very much more complete than that made by Mr. Beckwith, mentioned in this Department recently, and the suggestions as to remedies or modes of preventing injury commend themselves very much more. The procedure mentioned with most favor by the author is covering the beds before the appearance of the insects with a cloth, or even with old newspapers, which will serve to keep off the beetles. Contrary to Mr. Beckwith, Mr.

Chittenden concludes that there is only a single annual generation of the insects. It seems also that the species has been mistaken heretofore, and that instead of being *Anthonomous musculus*, it is *A. signatus*. The insect has also been found on the Blackberry, and indeed the statement is made that this is probably the original food-plant of the species. This brings to mind that I found the Strawberry leaf roller, *Phoxopteryx comptana*, quite common in Atlantic County, N. J., on Blackberries in 1892, but neither saw nor heard of their injuring Strawberries.

Winter Campaigns.—The entomologist knows, what the farmer frequently does not, that there is no time in the year when insects are not to be found in some stage. To be sure insects are not a very prominent feature of the Winter landscape, but there is no difficulty in finding a great many of them nevertheless. From the economic standpoint the Winter habits of the insects are of extreme importance, and we are often able to reach them with less trouble and more effect than during the Summer. A great many of the forms that are injurious in the orchard, Winter in the imago stage, hiding in and under rubbish, or under the bark of trees, especially old Apple trees, or in the decaying or injured twigs or branches. It is very good practice, therefore, to make use of some spell of pleasant weather, to give the orchard a thorough cleaning up. Not a rubbish heap, not a dead twig or branch should be left anywhere in it. The bark of the trees should be carefully scraped, so as to remove all the loose flakes, and with them also all the insects that are hibernating under them. This will also destroy many of the insects that Winter in the pupa state, like the Codling moth, of which I have seen pupæ under every scale of the old Apple trees in a carelessly kept orchard. A very little Winter work in orchards of this character may make an appreciable difference in the quantity of perfect fruit the following season. In the twigs and branches that are dead or dying, many Longicorn borers may be found in some stage, not the least important of which may be species of *Elaphidion*. These may all be destroyed by thorough removal of the infested wood. At this season it is easy to find the eggs of the Tent caterpillars on the trees infested by them. The well-known belts are easily seen with a very little practice, and they are as easily picked off and destroyed. Perhaps the most important of the pests that may be reached in the Winter are the scale insects, many species of which infest the orchard and the nursery, often proving very destructive to young trees. Young Pear trees infested by the scurfy scale can be entirely rid of them by washing with a strong whale-oil soap the trunk and larger branches; or, instead of the soap a solution of one pound kainit in one gallon of water may be used. This will leave the trees in good condition in Spring, and a healthy growth may be expected. Many other species of scales spend their life on the twigs and branches, and are not so easily reached; for these the kerosene emulsion is best, and it can be used at a much greater strength than would be advisable in Summer, when the foliage would have to be regarded. Kerosene emulsion diluted nine times would be fatal to most of the scales

infesting our orchard trees, even if only a single application were made. At this strength even if it does not kill the scale or the eggs which may be under it, part of the waxy or other material composing the scale will be loosened from its fastenings, so as to allow water to penetrate and complete the work begun by the insecticide. As a matter of practice a second spraying two or three weeks after the first is to be recommended, that the work begun by the first may be completed. Few scales, indeed, will survive such treatment, and the trees will show the beneficial effect early in the season, having nothing to retard their growth. This practice is especially important in nurseries, from which it is certain that many of the plant diseases and injurious insects are widely spread at the present day.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Owing to low subscription rate, "extras" will be charged for, and when they are wanted, it should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

INSECT TRACHEÆ.—Dr. A. C. Stokes writes in "Science" for Jan. 27, 1893, "to confirm an important discovery made in this country, but, so far as I have been able to learn, never corroborated in any American publication. It was Prof. George Macloskie, of Princeton College, who announced in the "American Naturalist" for 1884, page 567, that the so-called spiral threads of insect tracheæ are in reality chitinous folds of the membrane, and consequently tubules, which are longitudinally fissured." Dr. Stokes' observations, made chiefly on *Zaitha fluminea*, are described at length, and the appearance of the tracheal threads, or tænidia, is figured. The tænidia, as has been previously pointed out, are not spiral, but primarily independent of and parallel to each other. He also discusses certain "internal, chitinous, hair-like bodies arising from the fold of the tænidia and projecting into the lumen of the tubes," and "certain minute, elliptical bodies in the tænidia, each with an internal, presumably glandular, appendage, to all appearance forming part of the tænidium, from which it springs."

VENTURESOME INSECTS.—It is perhaps worth recording in connection with notes on venturesome insects, that it has several times been my ex-

perience that I must give my net to a companion to catch *Pyrameis huntera* or *atalanta*, which had alighted on my back. That there is a manifestation of something akin to curiosity on the part of many Lepidoptera is unquestionable. Butterflies return on the same round of glades in a wooded tract, and every collector must have remarked that his quarry is more easily secured if he stands still when a desirable butterfly passes high above him rather than if he pursues. By experiment he might further remark that a thrust with a conspicuous umbrella or net at a butterfly out of reach is almost certain to attract the insect's attention, and that in a large per cent. of instances it will return all the more speedily on account of the interference.

In Indianapolis I was once attracted by a fine specimen of *Papilio cresphontes*, a butterfly rare in this locality, flying over a large flower garden. I stopped and leaned over the fence to watch it. My comrade wished to know why I stopped, but I begged him to be quiet. I had no net and had little expectation of making any capture; but *cresphontes* flew around from point to point, and after several uncertain circuits, in each of which he gradually approached nearer to us, he at last ventured so near that, by a quick motion, I actually caught him in my hand as I leaned over the fence. It is curious to note that most of the memoranda as to venturesome insects have to do with some species of *Pyrameis*.—O. S. WESTCOTT.

PUPARIUM OF CERIA SIGNIFERA.—In recently going over some Diptera that have been for some time in my collection unnamed, I found the following interesting specimen. It closely resembles a *Conops*, and might easily be mistaken for that genus. It proves to be *Ceria signifera* Loew ♀. This specimen was given to me by Dr. Henry Skinner; with it was a card, to which was attached a leaf, and on this was a small pupa-case. On the card was written the following: "Found near Bala, Pa. Dead oak leaf on ground; hatched May 13, 1889." At first it was thought to be the chrysalis of a small butterfly, but it is evidently the pupa of this fly. It is about 12 mm. in length (the anterior part being broken in hatching) the ground color of the empty pupa-case is brownish gray, roughly and irregularly netted with black. There is a dorsal binate row of dark brown tubercles, with single lateral rows alternating with those on the back; above and below the lateral row there is an obscure row of small tubercles, the posterior end has a long projection one-fourth its total length, the greater part of which is a dark glossy brown. The ventral surface is flat and firmly attached to the leaf. As far as known this species has only been recorded from Mexico, Florida and Texas; regarding the specimens from the latter locality in the type collection (Cambridge) there appears to be some doubt (see Williston's Synopsis p. 262). Also identified *Ceria daphnæus* Walker, collected in Jamaica, 1891, by myself. *Ceria tridens* Loew; was collected by Mr. Mr. E. V. Beales at Denver, Col., not before recorded east of California.—C. W. JOHNSON, Philadelphia, Pa.

NOTE ON CORIMELÆNA ALBIPENNIS Say.—This species, described by Say in 1831, seems not to have been recognized since, and Prof. Uhler,

in his "Check List," accompanies it with an interrogation point. In a collection of Colorado Hemiptera which I have recently had the pleasure of examining for Prof. C. P. Gillette, of Fort Collins, Colorado, I found a specimen which agrees in every particular with Say's description. I can have no hesitation in referring it to his species, and considering it a very well marked and distinct species. Say remarks "This insect is mutilated, but it is a very distinct species. I obtained it on the Missouri River, when with Major Long's exploring party." Say describes it under the name of *Thyrescoris albipennis*, but it should be referred to *Corimelæna*.

HERBERT OSBORN.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

COMPTES RENDUS. L'ACADEMIE DES SCIENCES, Paris, Dec. 26, 1892.—On the histology of the accessory organs of the male apparatus of *Periplaneta orientalis*, P. Blatter.

THE JOURNAL OF COMPARATIVE NEUROLOGY, II, pp. 137–172, Granville, Ohio, December, 1892.—Additional psychological note upon the gallery spider, C. H. Turner.

THE AMERICAN NATURALIST, Philadelphia, January, 1893.—The pupa of *Argyramœba œdipus* F., C. H. T. Townsend. February, 1893.—On a small collection of Coleoptera from the high mountains of British Columbia, H. F. Wickham, figs. A peculiar seed-like case-worm from the Grand Cañon, C. H. T. Townsend, figs.

JOURNAL DE L'ANATOMIE ET DE LA PHYSIOLOGIE, xxviii, 6, Paris, Dec. 21, 1892.—On the structural modifications which the yellow muscles of *Dytiscus* present during contraction, F. Tourneaux, 1 pl.

KNOWLEDGE, London, January, February, 1893.—Caterpillars (cont.), E. A. Butler, figs.

THE OTTAWA NATURALIST, January, 1893.—List of Coleoptera collected in 1883-84 by Mr. T. C. Weston on, and in the vicinity of, the Cypress Hills, N. W. T., W. H. Harrington. February, 1893.—[Faunistic notes on Coleoptera], W. H. Harrington.

ZOOLOGISCHER ANZEIGER, Leipsic, Dec. 26, 1892.—On the structure and development of the eyes of Phalangidæ, F. Purcell.—Jan. 23, 1893. A diluvial *Periplaneta*, Dr. E. Schaeff. On a new stage in the development of male Julids, C. Verhoeff.

ENTOMOLOGISKE MEDDELELSER, III, 5, Copenhagen, 1892.—Coleopterous larvæ in the Copenhagen Museum, F. Meinert.

ENTOMOLOGISK TIDSKRIFT, xiii, 1–4, Stockholm, 1892.—*Cephus pygmæus* L. in North America, S. Lampa. Summer studies in Entomology, C. H. Neren. Histological studies on the digestive-canal of some lepidopterous larvæ, E. Holmgren, 6 pls. On stridulation in *Acherontia atropos* L., C. D. E. Roth.

TWENTY-THIRD ANNUAL REPORT OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO, 1892, Toronto, 1893.—Notes on the rarer butterflies of the Province of Quebec, Rev. T. W. Fyles. A trip to Mt. Washington, H. H. Lyman. On the power of Insects to resist frost, J. A. Moffat. The Web-worm tiger (*Plochionus timidus* Hald.), Miss M. E. Murtfeldt. The mole-cricket, *Gryllotalpa borealis* E. W. Doran. The songs of our grasshoppers and crickets, S. H. Scudder, figs. Economic entomology, J. Fletcher, J. A. Moffat, Rev. C. H. Bethune, S. H. Scudder.

BOLETIN DE LA ACADEMIA NACIONAL DE CIENCIAS DE CORDOBA, xii, Buenos Aires, 1892.—Argentine Dipterology—Mycetophilidæ,* F. L. Arribalzaga, 2 pls.

ANALES DE LA SOCIEDAD CIENTIFICA ARGENTINA, xxxiv, 2, Buenos Aires, August, 1892.—New Hemiptera of the Argentine and Uruguayan faunas,* C. Berg.—4. October, 1892. Argentine Dipterology—Syrphidæ (cont.),* F. L. Arribalzaga.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY, London, January, 1893.—On some points in the morphology of the Arachnida (*s. s.*), with notes on the classification of the group, R. I. Pocock, 2 pls. Additional notes on the origin of the tracheæ from setiparous glands, H. M. Barnard, fig. On the terminal organ of the pedipalp of *Galeodes* and the discovery of a homologous organ on the pedipalp of *Phrynus*, id. Some observations on the mouth organs of Diptera, C. O. Waterhouse.

SCIENCE, New York, Jan. 20, 1893.—The nest of the trap-door spider, D. Cleveland. An interesting sensory organ in certain plant lice, J. B. Smith.—Jan. 27, 1893. The structure of insect tracheæ, with special reference to those of *Zaitha fluminea*, A. C. Stokes. Notes from the Cornell Insectary, M. V. Slingerland (observations upon plant lice).—February 3d. Some insect immigrants in Ohio, F. M. Webster.

HATCH EXPERIMENT STATION OF THE MASSACHUSETTS AGRICULTURAL COLLEGE, Bulletin No. 20.—Report on Insects, C. H. Fernald, Amherst, Mass., January, 1893.

* Contains new species other than North American.

DIE PALÆARKTISCHEN GROSSSCHMETTERLINGE UND IHRE NATURGESCHICHTE, Bearbeitet von Fritz Ruhl. 1. Doppel-Lieferung (Lief. 1 and 2), Leipzig, Ernst Heyne, 1892, 8vo. To be completed in about 75 "Lieferungen" at 1 mark 20 pf. each. This double part contains the general part of 76 pages and the beginning of the descriptions.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, vii, pp. 1–44, December, 1892.—Catalogue of the described South American species of Calyptrate Muscidæ, C. H. T. Townsend.

PRINCIPLES OF ZOOLOGY.—A Guide for Beginners, by Richard C. Schiedt, professor of Natural Sciences in Franklin and Marshall College, Lancaster, Pa. Lancaster, 1892, 12mo., 310 pp., $1.35. "Based upon the larger text-books of Professors Arnold Lang, Berthold Hatschek and Korschelt and Heider, which present the latest results of morphological research not yet published in the English language. . . . The embryological element preponderates on account of its importance for modern thought in general."—Preface. Tracheate Arthropoda, pp. 180–194, 207–220.

THE KANSAS UNIVERSITY QUARTERLY, I, 3, Lawrence, Kan., January, 1893.—On the Apioceridæ and their allies, S. W. Williston, 2 pls. Diptera Brasiliana, III,*† id.

RENDICONTO DELL 'ACCADEMIA DELLE SCIENZE FISICHE E MATEMATICHE (2), vi, 7–12, Naples, 1892.—Some effects of the venom of the Tunisian scorpion (*Buthus tunetanus*) on man, A. Costa.

ZOOLOGISCHE JAHRBUCHER, vi, 5, Jena, Dec. 30, 1892.—Observations on butterflies living in water, G. W. Mueller, 1 pl. On the difference in time in the appearance of the sexes in butterflies, W. Petersen. Contributions to the biology of the Hymenoptera, C. Verhoeff, 2 pls.

ARCHIV FUR NATURGESCHICHTE, lviii, II, 2, Berlin, December, 1892.—Review of the scientific literature on Entomology for the year 1891, P. Bertkau.

DEUTSCHE ENTOMOLOGISCHE ZEITSCHRIFT, 1892, 2, Berlin, December, 1892.—*Hadrosticta* nov. gen. *Cetonidarum* from Central America near *Argyripa lansbergii* Sallé, Dr. G. Kraatz, 1 fig. On the biology of some ant guests, E. Wasmann.

HORÆ SCIENTATIS ENTOMOLOGICÆ ROSSICÆ XXVI, 1–2, St. Petersburg, 1891.—Biology of the coprophagous and necrophagous flies, I, J. Portschinsky; 3–4, 1892. Biology of the Lepidoptera of Russia: III. Color marking and ocellate spots, their origin and development (cont.), J. Portschinsky, 2 pls.

THE ENTOMOLOGIST'S RECORD, London, Jan. 15, 1893.—Life-history of *Dasycampa rubiginea*, Dr. W. S. Riding. Practical hints on the arrangement of our cabinets, A. J. Hodges.

* Contains new species other than North American. † Contains new genera.

JOURNAL OF THE INSTITUTE OF JAMAICA I, 5, Kingston, January, 1893. —*Peripatus*, [*P. jamaicensis*] M. Grabham, figs. A scorpion parasite, C. H. T. Townsend. Description of a new Jamaican spider, T. D. A. Cockerell.

DELAWARE COLLEGE AGRICULTURAL EXPERIMENT STATION, Bull. xiv for December, 1891, Newark, Del., 1892?—Notes on a corn Crambid [*C. caliginosellus*], M. H. Beckwith, figs.

BULLETIN FROM THE LABORATORIES OF NATURAL HISTORY OF THE STATE UNIVERSITY OF IOWA, II, 3, Iowa City, Iowa, January, 1893.—On the early stages of three North American Coleoptera, H. F. Wickham. Report on an entomological reconnoissance of southern Alaska, id. On two species of Coleoptera introduced from Europe, id.

EVIDENCE OF MR. JAMES FLETCHER, entomologist and botanist, before the select Standing Committee of the House of Commons on Agriculture and Colonization. Session of 1892. Ottawa.

SITZUNGSBERICHTE DER KAISL. AKADEMIE DER WISSENSCHAFTEN. Mathematisch-Naturwissenschaftliche Classe. CI. Abtheilung I, 1 and 2, Vienna, 1892.—Monograph of the digging wasps allied to *Nysson* and *Bembex*, A. Handlirsch, 3 pls.

MEMOIRES DE L'ACADEMIE IMPERIALE DES SCIENCES DE ST. PETERSBOURG (8), xxxviii, No. 5, 1891.—The embryological development of *Phyllodromia* (*Blatta*) *germanica*, N. Cholodkovsky, 6 pls.

XXXVIII. BERICHT DES VEREINS FUR NATURKUNDE ZU KASSEL. 1892. —On the so-called *Triungulinus* form of *Melœ* larvæ, Dr. L. Weber, 1 pl.

ANNALEN DES K. K. NATURHISTORISCHEN HOFMUSEUMS vii, 3, Vienna, 1892.—New forms of Hymenoptera, F. F. Kohl, 3 pls. Contribution to the Microlepidopterous fauna of the Canary Archipelago, Dr. H. Rebel, 1 pl.

THE TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1892, part 4, January, 1893.—New light on the formation of the abdominal pouch in *Parnassius*, S. H. Scudder. Additions to the Longicornia of Mexico and Central America, with notes on previously-recorded species, C. J. Gahan, 1 pl. Contribution to a knowledge of the Homopterous family Fulgoridæ,*† W. L. Distant, 1 pl. The secretion of potassium hydroxide by *Dicranura vinula* (imago) and the emergence of the imago from the cocoon, O. H. Latter. Further experiments upon the colour-relation between certain lepidopterous larvæ, pupæ, cocoons and imagines and their surroundings, E. B. Poulton, 2 pls.

THE CANADIAN ENTOMOLOGIST, London, Ontario, February, 1893 — Candian Hymenoptera, 2, W. H. Harrington. Synopsis of the Asilid genus *Blacodes*, D. W. Coquillett. Notes on some injurious insects of

* Contains new species other than North American. † Contains new genera.

Texas, F. M. Webster. The larvæ of the Clisiocampæ, H. G. Dyar. *Astatus bicolor* Say, W. J. Fox. Note upon the revision of the genus *Cucullia*, A. R. Grote. A Trypetid bred from galls on *Bigelovia*, C. H. T. Townsend. The Membracidæ of St. Vincent Island, W. I., F. W. Goding.

INSECT LIFE, v, 3, Washington, D. C., January, 1893.—The glassy-winged sharp-shooter (*Homalodisca coagulata* Say), Eds., figs. The Osage Orange Pyralid (*Loxostege macluræ* Riley), Miss M. E. Murtfeldt, figs. The food-plants of some Jamaican Coccidæ, T. D. A. Cockerell. The "maxillary tentacles" of *Pronuba*, J. B. Smith, figs. The potato-tuber moth (*Lita solanella* Boisd.), R. A. Wright. Food-plants of North American species of *Bruchus*, Eds. The strawberry weevil (*Anthonomus signatus* Say), F. H. Chittenden, figs. Damage to forests by the destructive Pine Bark Beetle (*Dendroctonus frontalis* Zimm.), A. D. Hopkins. An interesting water bug (*Rheumatobates rileyi* Berg.), Eds., figs.

PSYCHE, Cambridge, Mass., February, 1893.—Communal cocoons and the moths which weave them,*† W. J. Holland, 1 pl. On the attraction of light for the two sexes of Coleoptera, H. F. Wickham. Descriptions of new species and genera of West African Lepidoptera, II,*† W. J. Holland. A melanistic locust, A. P. Morse. A new American *Lacinius*, N. Banks. The larval stages of *Ichthyura multnoma* Dyar, H. G. Dyar.

STRAY NOTES ON THE NOCTUÆ by J. W. Tutt, F. E. S., December, 1892. Published by the author, Westcombe Hill, Blackheath [London], S. E., xxiv pp.

BERICHTE DER NATURFORSCHENDEN GESELLSCHAFT ZU FREIBURG I. B. vi, 2, 1891.—On the reduction of the chromatic element in the formation of the sperm in *Gryllotalpa vulgaris* Latr., O. vom Rath.

FESTSCHRIFT ZUM SIEBENZIGSTEM GEBURTSTAGE Rudolf Leuckarts, Leipzig, Engelmann, 1892.—On development history of insects, Dr. A. Tichomirow, 1 pl.

THE ENTOMOLOGIST, London, February, 1893.—Remarks on variation in *Vanessa atalanta* and *V. cardui*, R. South, fig. Removal of grease from the bodies of moths, W. M. Christy.

IOWA AGRICULTURAL EXPERIMENT STATION, Bull. No. 19, Ames, Ia., November, 1892.—Report of experiments and studies in Entomology, H. Osborn, figs. Notes on the potato-stalk-weevil (*Trichobaris trinotata* Say), F. A. Sirrine, figs.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, London, February, 1893. —West Indian Coccidæ, T. D. A. Cockerell.

* Contains new species other than North American. † Contains new genera.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

ARACHNIDA.

Araneina: *Anoka peckhami* Cockerell, Jour. Inst. Jam. I, p. 222, Jamaica.
Phalanginæ: *Lacinius texanus* Banks, Psyche vi, p. 403, E. Tex.

COLEOPTERA.

Longicornia: New genera and species from Mexico and Central Amer., Gahan, Trans. Ent. Soc. Lond. 1892, pp. 255-273.

DIPTERA.

Blacodes cristatus Coquillett, Can. Ent. xxv, p. 33, *B. truncus, clausus*, p. 34, Cal.
Eurosta bigeloviæ Townsend, Can. Ent. xxv, p. 49, N. Mex.

HEMIPTERA.

Membracidæ: Six new species, St. Vincent, W. I., Goding, Can. Ent. xxv, pp. 53-56.
Aspidiotus palmæ Cockerell, Ent. Mo. Mag. (2), iv, p. 39, Jamaica.
Diaspis tentaculatus Morgan, l. c., p. 41, Jamaica.

HYMENOPTERA.

Stizus nanus Handlirsch, Sitzb. Ak. Wiss. Wien, CI, 1 Abth., p. 61, Ga.; *S. mexicanus*, p. 66, Mex.; *S. guttulatus*, p. 67, Mex.; *S. xanthochrous*, p. 69, Tex.
Stigmus temproalis Kohl, Ann. Naturh. Hofmus. vii, p. 204, Guatemala; *Oxybelus* (*Oxybeloides*) *columbianus*, 208, Brit. Col., Wash.
Coleocentrus canadensis Harrington, Can. Ent. xxv, p. 30, Ont.; *Ecthrus rufopedibus*, p. 31, Montreal.
Bracon anthonomi Ashmead, Ins. Life, v, p. 185; *Catolaccus anthonomi*, p. 185; *C. incertus*, p. 186, D. C.

LEPIDOPTERA.

Clisiocampa ambisimilis Dyar, Can. Ent. xxv, p. 40, Cal.; *C. pluvialis*, p. 42, Oreg., Wash.

Among the various contrivances resorted to as a safeguard against the bee-moth (*Galleria cereana* Fab.), perhaps the most ingenious is that mentioned by Langstroth, of governing the entrances of all the hives by a long lever-like *hen roost*, so that they may be regularly closed by the crowing and cackling tribe when they go to bed at night, and opened again when they fly from their perch to greet the merry morn.—*Cowan's Curious Facts.*

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

JANUARY 11, 1893.

Meeting called to order at 8.20 P.M., Dr. Horn, Director, presiding. Members present: Ridings, Liebeck, Laurent, Calvert, Skinner and Johnson. Associates: Fox, Boerner, Dr. Castle. The Director announced the death, on Jan. 3, 1893, of Mr. Isaac C. Martindale, Vice-Director of the Section. Mr. Calvert offered the following, which was ordered to be transcribed in the minutes: "This Section desires to record the sense of loss it has sustained in the death of Mr. Martindale and the appreciation in which it held the deceased. His knowledge, advice and aid were ever at the service of its members. His cheerful presence cannot fail to be missed at its meetings. While recognizing that all these advantages are no longer its to enjoy, this Section can but hope that his example will be a source of encouragement to all his co-laborers in Entomology." Dr. Skinner exhibited specimens of a new species of *Eudamus* from Fort Klamath, Oregon. Dr. Horn said he hoped to present, by next month, his paper on Galerucini, and also exhibit the specimens. Mr. Calvert stated that he had again commenced work on a catalogue of the Odonata of Philadelphia and vicinity, and hoped to produce a work by which all the species might be determined, by suitable synoptic tables and brief descriptions. An account of the external and internal anatomy will also be given. The speaker further said that civilization reduced the number of species by the pollution and filling up of streams and ponds, and it is, therefore, important that the work be done as soon as possible.

HENRY SKINNER, *Recorder.*

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

NEW SPECIES OF NOCTUIDÆ.

(Continued from page 253, Vol. III, No. 10.)

By JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Setagrotis terrifica n. sp. Pl. vi, fig. 2.—Pale whitish luteous, the ordinary spots more white, outlined by a black filling in the cell. T. a. line imperfect, hardly traceable; t. p. line evenly outcurved, denticulate on the veins; s. t. line marked by a series of fuscous spots. Secondaries white. Beneath white, powdered with black, with a black discal spot and an outer line on both wings. Expands 34—35 mm.; 1.36—1.40 inches.

Hab.—Colorado. Bruce, No. 51.

Two male specimens. The species differs from the described forms in the luteous ground color and in the unusually long antennæ.

Carneades siccata n. sp. Pl. vi, fig. 1.—Pale whitish gray with a luteous tinge, powdered with black. On the primaries this powdering sometimes darkens the s. t. space completely. The median lines are black, incompletely geminate. The s. t. line is pale, defined by the black powderings in the s. t. and terminal spaces. Claviform wanting. Orbicular small, round, black; reniform large, kidney-shaped, black. Secondaries white. Expands 34—37 mm.; 1.36—1.48 inches.

Hab.—Colorado. Bruce, No. 140.

Differs from all the described species by having pectinated antennæ. It somewhat resembles forms of *Porosogrotis rileyana*, but differs in the sexual characters deciding the reference to *Carneades*.

Carneades edictalis n. sp. Pl. vi, fig. 3.—Fuscous-brown, collar with a median darker line; all the lines present. Basal line geminate, interrupted on cell. T. a. line distinctly geminate, inner line brown, outer blackish. T. p. line geminate, outer line vague, inner line lunulate or crenulate. S. t. line marked by preceding dusky spots and shades; claviform very small. A blackish shade before and between the ordinary spots. The orbicular round, slightly paler, reniform upright, constricted centrally, dusky filled inferiorly. Expands 35—38 mm.; 1.40—1.52 inches.

Hab.—Colorado. Bruce. Nos. 70, 207, 326.

Three males are at hand, the antennæ pectinated. This species is, therefore, related to the preceding, *siccata*, and with it forms a distinct group in the genus.

Cerapoda stylata n. gen. et sp. Pl. vi, fig. 4.—Ash-gray with black powderings, median lines very widely separated, the t. p. very even, nearly parallel with outer margin. S. t. line almost obsolete, traceable in the dark terminal space only by two long, pale dents on veins 3 and 4, forming a prominent W. A dusky shade in the cell relieves the pale ordinary spots. Secondaries white, with a punctiform outer dark line. Expands 36—38 mm.; 1.45—1.52 inches.

Hab.—Colorado, Bruce. Nos. 23, 99, 208.

The genus is characterized by a series of long, curved, outwardly divergent, claw-like spines on the outer sides of the tips of the fore tibiæ and tarsi. It resembles the pale forms of *Oncocnemis*.

Oncocnemis pudorata n. sp. Pl. vi, fig. 8.—Belongs to the *fasciatus* section of the genus, and most like *tenuifascia*, though larger. Color of head, thorax and primaries a dull, olivaceous powdery fuscous gray, with all the markings indefinite. A whitish band beyond the t. s. line is most evident, and is continued across the otherwise black secondaries. Expanse 28—29 mm.; 1.12—1.16 inches.

Hab.—Laggan. British Col., Agnes Lake 6700 feet, Aug. 19, 1891, Mr. Thos. E. Bean, Nos. 458, 491, ♂ and ♀.

Oncocnemis colorado n. sp. Pl. vi, fig. 5.—Resembles *chandleri* in color and appearance, and differs from it in color characters mainly in the less contrasting maculation, the very indistinct spots preceding the vague s. t. line, and in that the t. p. line is even and not lunulate. The sexual characters are like those of *augustus*, and not like those of *chandleri*. Expands 34 mm.; 1.35 inches.

Hab.—Park County, Col. Bruce.

Types are in the United States National Museum, in Mr. Neumoegen's collection and in the Rutger's College collection. The species seems not uncommon, and it is quite likely that it has been confused with *chandleri*. Indeed, I have so named it myself, at first considering the ornamental characters as merely varietal.

Mamestra languida n. sp. Pl. vi, fig. 6.—Resembles a small *purpurissata* in general appearance. Differs in the absence of the t. a. line, by having the t. p. line even, rather than lunulate, by the darker shade extending over the costal region and through the median cell to the t. p. line, and, finally, by the whitish secondaries. Expands 37.5 mm.; 1.50 inches.

Hab.—Colorado. Bruce, No. 261.

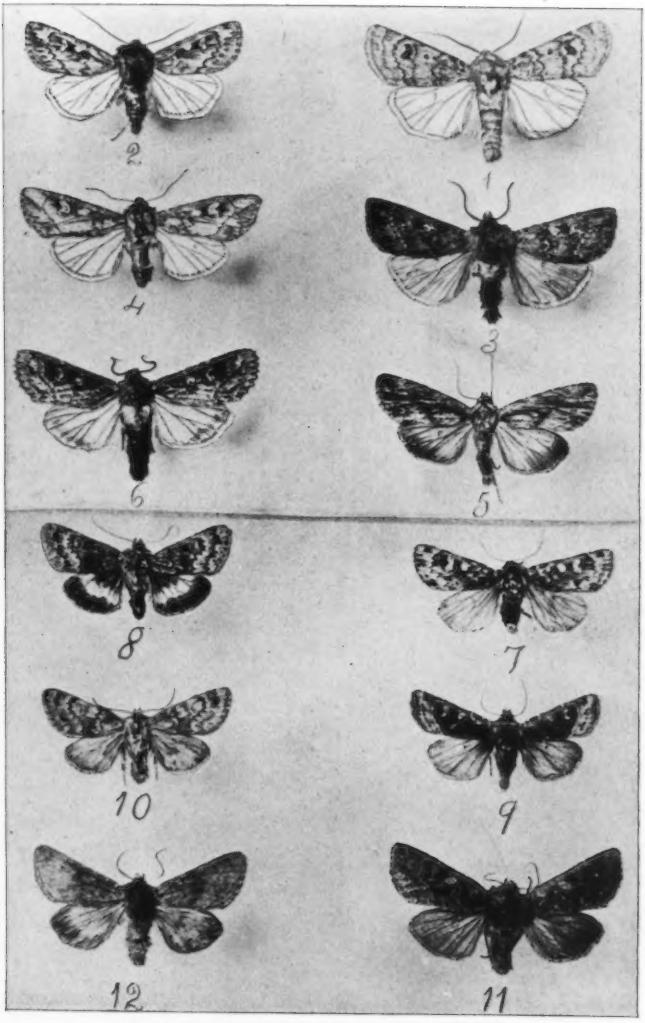
The resemblance to *purpurissata* extends to the antennal structure and to the relative proportion of thorax and abdomen. In ornamentation the resemblance becomes less striking on critical comparison.

Mamestra segregata n. sp. Pl. vi, fig. 11.—Very dark purplish brown, verging on blackish; a more reddish shade through the centre of the wing, the lighter regions relieved by gray powderings. Transverse lines all present, black or blackish, geminate, gray filled. Median lines approximate in the submedian interspace, connected by a black streak from the end of the claviform. Ordinary spots large, gray powdered, orbicular oblique, sometimes incomplete above. S. t. line yellowish sinuate, defined by black scales. Secondaries deep smoky-brown. Expands 36 mm.; 1.43 inches.

Hab.—Laggan, British Col., at light, May 13th and 17th. Bean, Nos. 447, 531, ♂ and ♀.

Differs from all the described species by the combination of very dark brown color, connected median lines and even s. t. line.

Agrotiphila maculata n. sp. Pl. vi, fig. 7.—Black and whitish gray, the markings contrasting. The patagiæ are gray margined, and the dorsum



NEW NOCTUIDÆ (Smith).

has a strong admixture of gray scales. Primaries with the median space darker than the rest of the wing in which gray is the ground upon which the black markings are laid. Basal line darkening the base of the wing. T. a. line broken, with an apparent inward angulation. T. p. line single, denticulate on the veins. S. t. line line marked only by a variably continuous dusky shade in the s. t. space. A series of black lunate terminal spots. Ordinary spots gray, defined by the black filling of the cell. Secondaries blackish smoky. Expands 31—32 mm.; 1.24—1.28 inches.

Hab.—Laggan, British Col., above timber, Bean. Nos. 461, 463.

Belongs to the typical section of the genus, but is different from all in the blotchy appearance of the margings. A peculiar glistening reflection of the secondaries caused them to photograph nearly white, and in this the figure given is incorrect.

Agrotiphila incognita n. sp. Pl. vi, fig. 9.—Smoky fuscous, part of the basal space and all beyond l. p. line of primaries paler, with a yellowish shade. Median lines geminate, very even, t. a. line with a slight inward angulation. S. t. ltne very even, pale and distinct. A blackish terminal line. Secondaries yellowish, margins blackish powdered. Expands 26—30 mm.; 1.04—1.20 inches.

Hab.—Laggan, British Col., above timber. Bean, Nos. 462, 492.

This is an ally of *A. rigida*, with which it agrees in structural characters. It differs obviously by the entirely different median lines and by the yellowish secondaries.

Scotogramma uniformis n. sp. Pl. vi, fig. 12.—General color a dull grayish luteous with an even and rather dense powdering of black hairs and scales. Head and thorax immaculate: primaries with vague traces of the ordinary markings in the form of dusky clouds. Secondaries smoky, with a yellowish tinge in the disc, fringes pale yellowish. Expands 33 mm.; 1.32 inches.

Hab.—Laggan, British Col., July 31st, far above timber (7000 feet). Bean, No. 465.

Belongs to the section of the genus with hairy vestiture and obviously distinct from all by the lack of any distinct ornamentation.

Scotogramma luteola n. sp. Pl. vi, fig. 10.—Ash-gray to fuscous or luteous gray, black powdered. The median lines are blackish, distinct, single, even or denticulate on the veins. S. t. line marked by a dusky preceding shade, divided into three clouds. A vague median shade darkens the inferior portion of the median space. The ordinary spots are wanting, or so vague as to be undescribable. Secondaries smoky with pale, yellowish fringes. Expands 28—30 mm.; 1.16—1.22 inches.

Hab.—Laggan, British Col., 6700 to over 7000 feet, July and August. Bean, Nos. 463, 495, 496.

Belongs to the series with hairy vestiture, and resembles *phoca* in wing form, differing obviously in the ornamentation, and most prominently in the secondaries, which in the new species are smoky, while in *phoca* they are dull yellow.

———o———

NEW GENERA AND SPECIES OF WEST AFRICAN LIMACODIDÆ.—I.

By W. J. Holland, Ph. D., Pittsburgh, Pa.

(Unless otherwise indicated the species are all from the valley of the Ogove.)

SEMYRA Walk.

1. **S. lineata** sp. nov. ♂.—Body and appendages dark brown. Primaries liver-brown; a very dark brown curved line runs from near the apex to the base below the costa and is interrupted near the end of the cell by a bright silvery spot; a similar dark brown line runs from near the apex inwardly to about the middle of the inner margin; there are a few brown rays near the base below the cell. The secondaries are wax-yellow, with the fringes darker. On the underside the primaries are pale brown, with the neurations whitish. The secondaries are of the same color as on the upperside, but the neurations are whitish and stand out distinctly upon the dark ground. The fringes on the underside of both wings are dark brown. Expanse 30 mm.

PARASA Moore.

2. **P. viridissima** sp. nov. ♂.—Front dark brown. Antennæ brown; the upperside of the thorax very dark green; the upperside of the abdomen bright pea-green; lowerside of the thorax tinged with brownish. Legs brownish; lowerside of abdomen pale green. Primaries bright green, with the base and the marginal area brownish. The marginal brown band is produced inwardly at the second median. The secondaries are pale green, with the margin pale brown. On the underside the wings are marked as on the upperside, except that there is no brown at the base of the primaries, and the nervules are whitish contrasting with the darker ground color. Expanse 32 mm.

EUCLEA Hüb.

3. **E. divisa** sp. nov. ♂.—Antennæ brown; front reddish. Body above and below brown. Legs concolorous. The primaries on the upper surface are wood-brown, with the basal half dark brown, the basal area being separated from the rest of the wing by a pale whitish curved line running from before the apex inwardly to the inner margin one-third of its length from the base. The secondaries are uniformly wood-brown; the underside of both wings is wood-brown. Expanse 24 mm.

4. **E. brunnea** sp. nov. ♂.—This insect is uniformly throughout dark brown. The secondaries are a trifle darker than the primaries. Expanse 23 mm.

LATOIA Guér.

5. **L. nana** sp. nov. ♂.—Antennæ brown; upperside of thorax green; upperside of abdomen dark brown. Legs and lowerside of body dark brown. Primaries pale brown, traversed by a broad band of paler brown running from the costa below the apex to the inner margin. Secondaries uniformly very pale brownish. The underside of the wings is uniformly of the same color as the upperside of the secondaries with the costæ and outer margin dark brown. The limbal band on the primaries reappears faintly on the underside. Expanse 25 mm.

6. **L. viridifascia** sp. nov. ♂.—Antennæ brown. Front and upperside of thorax pale green; upperside of abdomen pale green, shading into pale brown at the anal extremity; lowerside of thorax and abdomen with the legs and palpi dark brown. Primaries maroon, with the marginal area pale cinereous and the fringes dark brown. The dark area is interrupted about the middle of the wing by a band of pea-green, running from the inner margin parallel to the outer margin as far as the costa, constricted at the origin of the third median. The secondaries are wax-yellow. On the underside the primaries are marked as on the upperside, but with the markings fainter and poorly defined. The neurations are lighter than the ground color of the wings upon the underside. Expanse 27 mm.

7. **L. (?) albipuncta** sp. nov. ♂.—Front and collar ferruginous. Antennæ brown; upperside of thorax and abdomen dark maroon; lowerside of abdomen reddish. Legs dark brown, with the tarsi pale ferruginous, heavily clothed with hairs. The upperside of the primaries and secondaries are uniformly dark maroon-like the upperside of the thorax. The discs of both wings are semi-diaphanous; upon the primaries at the middle of the inner margin there is a moderately large, oval, whitish spot. Expanse 21 mm.

PTILURA gen. nov.

♂.—Antennæ moderately long, pectinated for three-fourths of the distance from the base, terminating in a simple filament. Palpi porrect, with the second joint longer than the other two, the third short, and all the joints clothed with moderately long hairs. Legs with the femora clothed heavily with hairs upon the inner margin. The tibiæ of the last pair are armed with four spurs near the end. At the extremity of the abdomen there are three tufts of plumose scales, two above diverging and directed upwardly, and one below above the anal opening directed downwardly. The primaries are subtriangular, with the costa straight for two-thirds of the distance from the base, then curving regularly to the apex. The

inner margin is straight; the apex is very slightly rounded; the outer margin is very slightly curved and the outer angle is evenly rounded. The secondaries are subpyriform, with the outer margin even rounded. Type *P. argyraspis* Holl.

8. **P. argyraspis** sp. nov. ♂.—Antennæ, front, palpi, and upperside of thorax brown. Abdomen on the upperside paler brown; the underside of the palpi and of the abdomen pale brown; the extremities of the tibiæ of the second and third pairs of legs and the extremities of the femora in the third pair are marked with whitish. The primaries are brown, with the limbal area dark brown, and the intraneural spaces ornamented with black velvety subhastate lines and spots, accentuated with greenish silvery markings as follows: a large subhastate spot before the base near the inner margin, above which is a small oval spot; near the end of the cell at the origin of the third median, a large hastate spot with its point turned toward the cell; beyond this a submarginal series of smaller subhastate spots interrupted between the second and third median. The first and last spots of the series are the smallest; the third and the fourth, reckoning from the apex, are the largest. Beyond this series of spots there is a faint submarginal brown line. The border is defined by a marginal brown line, and the fringes upon the interspaces are dark brown, the extremities of the nervules being marked by paler brown; there are also two dark brown spots about the middle of the costa. The secondaries are uniformly wood-brown, with the fringes checkered with paler color at the extremities of the nervules. On the underside the primaries and secondaries are obscure brown with the fringes distinctly checkered with obscure yellowish at the ends of the nervules. The primaries have a dark spot on the costa beyond the end of the cell. The secondaries, which are paler on the basal half, have a narrow discal mark at the end of the cell, followed by an obscure transverse brown line running from the costa to a point above the anal angle. Expanse 50 mm.

MIRESA Walk.

9. **M. transversata** sp. nov. ♀.--Antennæ brown. Body and appendages bright ferruginous. The primaries are bright ferruginous, shining near the base and inner margin; a dark brown, almost black, gently curved line runs from the apex to the inner margin, terminating at a point one-third of the distance from the base. This is succeeded on the outer margin by a similar line running from the apex, curving inwardly and terminating upon the outer margin, one-third of the distance from the outer angle. The secondaries are wax-yellow, shining on the inner margin, with the fringes dark brown. The underside of both wings is wax-yellow, with golden reflections; the transverse dark line of the upperside reappears very faintly upon the underside of the primaries. Expanse 45 mm.

10. **M. pyrosomoides** sp. nov. ♂.—Allied to *M. pyrosoma* Butl., from Madagascar, but larger and otherwise greatly differing. The antennæ

and front together with the collar and forward edge of the thorax on the upperside are bright yellowish ferruginous. The posterior part of the thorax is reddish brown; the upperside of the abdomen is yellowish ferruginous; the underside of the thorax and abdomen is darker brown; the legs are dark brown; the anterior pair are ornamented with silvery marks upon the upper end of the tibiæ. The primaries are densely clothed with shining brown scales, shading into yellowish on the inner margin near the base; they are ornamented by an obscure transverse median band of raised scales and by a similar very obscure subquadrate spot beyond the end of the cell. The fringes are dark brown; the secondaries are pale shining brown, with the fringes darker; the underside is wax-yellow, with the cell of the primaries darker, and the inner margin of the primaries paler. Expanse 42 mm.

11. **M. auribasalis** sp. nov. ♂.—Antennæ, front, palpi and body, dark brown. The patagiæ are marked with some golden scales, and at the base of the antennæ there is on either side of the head a prominent silvery-white spot. The legs are dark brown, with the tibiæ and tarsi of the anterior pair marked with minute silvery-white spots. The tibiæ and tarsi of the third pair are paler than the other legs. The primaries are brown, with a profusion of golden scales on the inner margin near the base; the outer margin near the apex is paler brown. The wings are traversed by a very obscure transverse basal, transverse median, and irregularly curved marginal line. The secondaries are pale reddish brown, with the fringes darker before the anal angle. On the underside the wings are pale reddish brown, with the cell of the primaries clouded with dark brown. The fringes of the primaries are dark brown, and the fringes of the secondaries dark brown before the anal angle. Expanse 45 mm.

12. **M. nobilior** sp. nov. ♀.—Antennæ testaceous. Front and collar reddish. Palpi dark brown; upperside of thorax and abdomen dark ferruginous; lowerside of thorax and abdomen pale ochraceous. There is a silvery spot at the origin of each of the antennæ. The first two pairs of legs are dark brown. The third pair is pale ochraceous. The primaries have the basal third fuliginous, with a profusion of golden scales on the inner margin near the base. There is an oval fuliginous spot at the end of the cell. The middle of the wing is crossed by a cinereous transverse band running from before the apex from the costa to the inner margin sharply defined externally by a dark brown shade, which covers the disc as far as the irregularly curved, submarginal line of lunulate fuliginous spots, which runs from before the apex to the outer angle. This submarginal line is followed on the margin by a cinereous border, which does not quite reach the outer angle. The secondaries are brownish with the inner margin and the costa pale cinereous and the cell covered with dense fuliginous hairs. On the underside the wings are shining, pale testaceous, with the cell and the outer margin of the primaries obscurely clouded with dark brown. The neurations are lighter and sharply defined upon the darker ground color. Expanse 48 mm.

TEINORHYNCHA gen. nov.

♀.—Antennæ simple, filiform. Palpi produced, compressed, very long. The first joint is short; the second relatively very long; the third very slightly shorter than the second, clothed with short scales. The legs without spurs, moderately hairy. Abdomen stout, not reaching beyond the inner margin of the secondaries. Primaries subtriangular with the costa straight, the apex rounded, the outer margin evenly rounded, the outer angle obtuse, the inner margin convex. The secondaries are subpyriform, with the outer margin evenly rounded. This genus is allied to the genus *Scopelodus* Westw., but the last joint of the palpi has not the form which prevails in that genus. In the structure of the wings, it is closely allied to *Miresa* Walk. Type *T. umbra* Holl.

13. **T. umbra** sp. nov. ♀.—Antennæ testaceous. Front, collar, thorax and abdomen reddish. Palpi very greatly produced, dark brown. Legs dark brown; the primaries are liver-brown, with an obscure, transverse, median line, and a more clearly defined submarginal line running from before the apex across the wing and terminating upon the margin above the outer angle. The fringes are darker; the secondaries are pale shining reddish brown, the fringes darker. On the underside the wings are pale reddish brown, with the cell of the primaries clouded with obscure fuliginous, and the inner margin lighter, shining. There are a few golden scales near the base of the secondaries. The fringes are darker. Expanse 42 mm.

RHYPTEIRA gen. nov.

♂.—Antennæ moderately long, incrassated at the base, moderately pectinated upon the lower half, beyond the middle simple. The palpi are short, divergent. The first joint very short, the second long, the third almost obsolete, clothed with a moderately heavy vestiture of silky scales. The eyes are prominent. The legs are heavily clothed with hairs. The abdomen is produced beyond the margin of the secondaries. The primaries are moderately long and narrow, with the costa regularly curved to the apex, which is rounded. The outer margin, which is narrow, is regularly curved; the outer angle is obtuse. The inner margin is nearly straight. The secondaries are subtriangular, with the inner margin straight, the costa convex, and the outer margin evenly rounded. The prevalent color is brown, with darker markings. Type *R. sordida* Holl.

14. **R. sordida** sp. nov. ♂.—Antennæ luteous. Front, collar, thorax and abdomen, pale wood-brown. The legs are lighter. The primaries are wood-brown, darker at the base, pale on the outer third, which is marked near the apex by a dark oval brown spot. There are also near the outer angle some obscure zigzag brown lines. The secondaries are wood-brown, paler externally, with a dark spot near the anal angle. The underside of both wings are uniformly pale brown. Expanse 40 mm.

COSUMA Walk.

15. **C. cinerea** sp. nov. ♂.—Antennæ testaceous. Palpi brown below, cinereous above; upperside of thorax and patagiæ cinereous marked with brown scales; the upperside of abdomen brownish; lowerside of abdomen and legs cinereous. The primaries are cinereous, shining, heavily dusted, with blackish scales and clouded with brown on the cell; a small blackish spot is located at the end of the cell, and is followed by a zigzaged transverse line of brown reaching from the costa before the apex to the middle of the inner margin. About the middle of this line there is a subtriangular patch of cinereous scales, which, in certain lights, has a silvery appearance. There is a short subapical band of dark brown, which is bent at its middle, and is followed by a submarginal series of small dots located on the intraneural spaces. The fringe is pale ashen checkered with brown. The secondaries are pale cinereous with darker brown scales upon the cell. The ends of the nervules are darker and the fringes are checkered like those of the primaries. On the underside the wings are uniformly pale yellowish cinereous sprinkled with blackish scales. The fringes are as on the upperside. Expanse 45 mm.

LIMACODES Latr.

16. **L. cretacea** sp. nov. ♂.—Uniformly white. The eyes black. The wings are lustrous white with a pale brownish spot on the outer third of the primaries, and with a large subtriangular space upon the disc of the secondaries marked with the same color. On the underside the costal area of the primaries is clouded with pale brown. Expanse 12 mm.

NATADA Walk.

17. **N. melampepla** sp. nov. ♀.—Antennæ black. Front, collar and patagiæ bright red. Thorax, abdomen and legs, reddish ochraceous. The primaries and secondaries are reddish ochraceous, with the outer margins and fringes brownish gray, the marginal border being widest near the costa. The underside of both wings is as the upperside, save that the black border of the primaries is continued along the costa to within one-third of the distance from the base. Expanse 50 mm.

Habitat.—Talaguga.

PROLATOIA gen. nov.

♂.—Antennæ moderately long, heavily pectinated, the setæ gradually diminishing in length from before the base to the ex-

tremity and appressed, *i.e.*, the setæ on both sides of the culmen are bent downwardly until their extremities nearly touch. The second joint is longest and wide laterally; the third is moderately long and subcylindrical. The legs are densely hairy and armed with spurs on the tibiæ. The abdomen does not extend beyond the outer margin of the secondaries. The primaries are subtriangular, relatively broad with the costa curved before the apex. The outer margin is evenly rounded. The inner margin is convex. The secondaries are subpyriform with the outer margin and the angles evenly rounded. Type *P. perileuce* Holl.

18. **P. perileuce** sp. nov. ♂.—Front and collar reddish. The antennæ blackish; the upperside of the thorax and abdomen dark plumbeous; the lowerside of the thorax and abdomen is whitish, as are also the legs, the first pair of which has the femora slightly margined with pale plumbeous. The primaries are uniformly dark plumbeous, shining. The secondaries are blackish, shining, with the fringes broadly whitish. On the underside the wings are as on the upperside, except that the primaries have a very pale plumbeous marginal line before the darker fringe, and there are some whitish hairs on the secondaries near the inner margin. Expanse 23 mm.

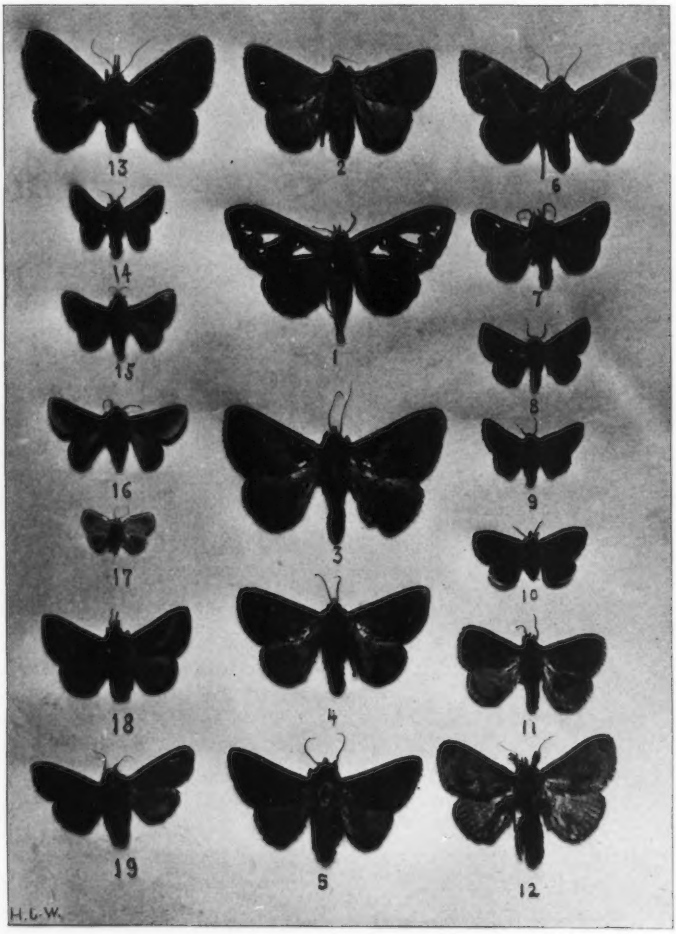
EXPLANATION OF PLATE VII.

Fig. 1. *Ptilura argyraspis* sp. nov.
" 2. *Miresa pyrosomoides* sp. nov.
" 3. *Miresa nobilior* sp. nov.
" 4. *Miresa auribasalis* sp. nov.
" 5. *Miresa transversata* sp. nov.
" 6. *Natada elsa* Druce.
" 7. *Semyra lineata* sp. nov.
" 8. *Euclea divisa* sp. nov.
" 9. *Euclea brunnea* sp. nov.
" 10. *Prolatoia perileuce* sp. nov.
" 11. *Cosuma rugosa* sp. nov.
" 12. *Cosuma cinerea* sp. nov.
" 13. *Teinorhyncha umbra* sp. nov.
" 14. *Latoia albipuncta* sp. nov.
" 15. *Latoia nana* sp. nov.
" 16. *Latoia viridifascia* sp. nov.
" 17. *Limacodes cretacea* sp. nov.
" 18. *Miresa hilda* Druce.
" 19. *Rhypteira sordida* sp. nov.

ERRATA.

Vol. iv, No. 1, p. 22, eighth line from bottom, for **glagœssa** read **glagoessa**

ENTOMOLOGICAL NEWS for February was mailed January 27, 1893.



WEST AFRICAN LIMACODIDÆ (Holland.)

EXCHANGES

Not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at end of the column, and only when necessary those at the top (being longest in) are discontinued.

Coleoptera.—Price-lists wanted.—J. H. Bomberger, Box 76, Columbiana, O.

Lepidoptera.—Cocoons of *Attacus columbia* Smith to exchange for native lepidoptera, or for books on North American lepidoptera.—Robert H. Wolcott, Phi Delta Theta House, Ann Arbor, Mich.

Lepidoptera.—I am studying the Noctuid genera *Euclidia, Drasteria* and *Litosea*. Specimens bought, exchanged or determined.—M. V. Slingerland, Cornell Insectary, Ithaca, N. Y.

Lepidoptera.—Wanted to purchase cocoons and larvæ from different parts of U. S. State name and price.—E. J. Kruegeman, 54 May St., Lake View, Chicago, Ill.

Lepidoptera.—Wanted to exchange, papers on N. Am. Lepidoptera for Noctuidæ or Heterocera generally. Noctuidæ named for privilege of retaining desiderata.—John B. Smith, New Brunswick, N. J.

Coleoptera of N. Am. and Mexico wanted by purchase or exchange; large collection.—Fred. C. Bowditch, Tappan St., Brookline, Mass.

Lepidoptera.—Wanted, *Plusia balluca, metallitica* and *ampha;* also the Hydrœcias. Have some of the rarer eastern Noctuids for exchange.—Henry Bird, Rye, N. Y.

Coleoptera and **Hemiptera**, European and exotic, also postage stamps of Roumania, offered for American Hemiptera-Heteroptera unnamed.—A. L. Montandon, Strada Viilor filarete, Bucarest, Roumania.

Phryganidæ wanted; will exchange choice Coleoptera and Lepidoptera from Kansas, Colorado and New Mexico (Prof. F. H. Snow's collecting) for Caddice-flies, U. S. or exotic.—Vernon L. Kellogg, Univ. of Kansas Lawrence, Kansas.

Coleoptera.—Coleoptera to exchange for Coleoptera, Hymenoptera, Odonata, aquatic Hemiptera and entomological literature. Cicindelidæ, Cerambycidæ, Meloidæ, especially desired.—W. E. Snyder, Beaver Dam, Wis.

Lepidoptera.—Good exchange or cash given for specimens of *Nadata doubledayi* Pack. Also wanted any of the rarer Notodontidæ and Limacodidæ.—Harrison G. Dyar, 599 Broadway, New York City.

Coleoptera.—I wish to obtain Entomological literature in any language, especially that treating of Coleoptera and for works not in my possession will give good insects from the West and from Alaska, mostly Coleoptera.—H. F. Wickham, Iowa City, Iowa.

Lepidoptera.—I have for exchange *C. semidea, A. montanus, S. modesta* (imagos and pupæ), and other White Mountain material. The rarer Sphingidæ preferred.—R. Ottolengui, 115 Madison Ave., N. Y.

Lepidoptera (diurnal) of Iowa to exchange for species of same order not in my collection.—Henry G. Willard, Grinnell, Iowa.

Coleoptera.—Price-lists wanted.—Dr. E. B. Stephens, Plymouth, Mass.

Cynipidæ.—Named or unnamed Cynipidæ wanted by purchase or exchange. Always accompany the flies with their galls when possible.—C. P. Gillette, Ft. Collins, Col.

Orthoptera.—For exchange: Mexican Lepidoptera, unmounted, for literature, in any language, on N. A: Orthoptera. Also Indiana Orthoptera for others from any part of N. A.—W. S. Blatchley, Terre Haute, Ind.

Orthoptera.—I desire to procure, by purchase, exchange, or for identification, specimens of the genus *Spharagemon* from all parts of the country.—Albert P. Morse, Wellesley College, Wellesley, Mass.

Lepidoptera.—Cocoons and pupæ of the rarer moths, *luna*, *imperialis*, *regalis*, *P. fraterna*, *P. pittecium*, etc.; also many fine set specimens; hybrids from *selene* et *luna*, *ceanothi* et *cecropia*, *Gloveri* et *cecropia*. List exchanged.—Emily L. Morton, Newburgh, N. Y. (New Windsor delivery).

Lepidoptera.—I will exchange or sell specimens (imagos or larvæ) from Illinois for those of other localities. Have on hand prepared sets of last year's collecting.—Arthur J. Snyder, North Evanston, Ill.

Lepidoptera.—Prepared larvæ, live pupæ, Coleoptera and Reptiles from America desired in exchange for species of Europe.—A Voelschow, Schwerin in Mecklinburg, Germany.

Lepidoptera, Coleoptera and **Hemiptera** of Colorado for exchange.—E. V. Beales, 1650 Larimer Street, Denver, Col.

Coleoptera for exchange: good species in perfect condition. Cicindelidæ, Endomychidæ and *Leptura* are especially wanted.—L. B. Walton, Box 123, Keuka College, Yates County, N. Y.

Lepidoptera.—I wish to exchange large, sound pupæ of *Cecropia* and *Polyphemus* for pupæ or imagines of almost any other species of Lepidoptera.—James Tough, 234 S. Water Street, Chicago.

Lepidoptera.—American diurnals wanted. Will buy or exchange. Hesperidæ and Lycænidæ especially desired.—Henry Skinner, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

Lepidoptera.—A few rare Indian Lepidoptera to exchange for rare species from the Northwest.—Levi W. Mengel, Reading, Pa.

IN PREPARATION

A LIST OF ALL PERSONS INTERESTED IN THE

STUDY OF INSECT LIFE.

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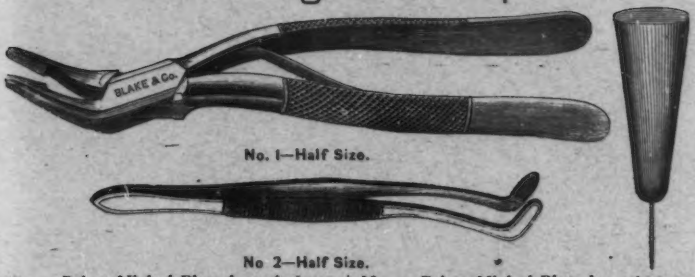

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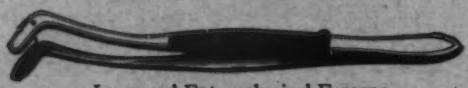

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